ESO 2551

OHIO FARM MACHINERY ECONOMIC COST ESTIMATES FOR 1999

Revised and Adapted for Ohio*

by
Sharon Thayer Baxter and Allan E. Lines
Research Assistant and Extension Economist

July 1999

Department of Agricultural, Environmental and Development Economics
Ohio State University Extension
The Ohio State University

*Data prepared by: William Lazarus, Extension Economist, Department of Applied Economics, University of Minnesota Extension Service.

Ohio Farm Machinery Economic Cost Estimates for 1999

Revised and Adapted for Ohio by Sharon Thayer Baxter and Allan Lines

The tables in this publication estimate farm machinery operations or function costs for 1999. The estimates use an economic engineering approach. The data represent average farming industry costs for specified machines and operations.

Machine costs are separated into time and use-related categories. Overhead costs accrue to the owner whether or not a machine is used. Overhead includes time-related economic costs: interest, insurance and housing. There are no personal property taxes in Ohio. Operating costs occur only when a machine is used. They include fuel, lubrication, use-related repairs, and labor. Depreciation is also usually considered a time-related cost. Depreciation may also be related to use to the extent that more usage shortens life and reduces salvage value.

OVERHEAD COSTS: Time-related costs are prorated over a 12-year economic life. Trade-in values are estimated based on American Society of Agricultural Engineers formulas.

Purchase prices are discounted from manufacturers' list prices. A 10 percent discount off list price appears "normal." The tables include some adjustment for delivery and setup. An equivalent price adjustment for the income tax expensing option is not included. A housing charge on average investment of 33 cents per square foot of shelter space needed per year is made.

A six percent "real" (inflation-adjusted) interest rate is used in the cost estimates. This real rate is calculated by taking a nominal rate charged by lenders, minus a measure of the inflation rate per year expected over the years of ownership. Insurance is 0.85 percent of new cost. The interest and insurance cost formulas are slightly different from those used in previous years. Adding one year's depreciation to the numerator in effect bases the costs on the value at the beginning of each year owned. This gives a slightly more accurate calculation of the actual costs over the years owned. In states where farm machinery is taxed as personal property, property tax could be calculated in a similar manner, depending on how taxes are assessed.

Formulas used to compute machinery overhead costs ($ per year):

$$\text{Depreciation} = \frac{\text{Purchase cost - salvage value}}{\text{Years you will use machine}}$$

$$\text{Interest} = \frac{\text{purchase cost + salvage value + annual depreciation}}{2} \times \text{"real" interest rate}$$

$$\text{Insurance} = \frac{\text{purchase cost + salvage value + annual depreciation}}{2} \times \text{insurance rate}$$

$$\text{Housing} = \text{price per sq. foot} \times \text{sq. feet shelter space required}$$

OPERATING COSTS: Fuel cost is calculated by multiplying the fuel consumption by the price of fuel, with fuel consumption assumed to be 0.044 gallons of diesel fuel per horsepower hour. The price of diesel fuel is projected at 70 cents per gallon. All power units, tractors, combines, trucks, etc., are assumed to use diesel fuel. Lubrication cost is assumed to be 15 percent of fuel cost.

The formulas for repair and maintenance costs estimate total accumulated repair costs according to the accumulated hours of life-time use. Repair and maintenance calculations are based on American Society of Agricultural Engineers (ASAE) formulas. The total cost is then

divided by accumulated hours to arrive at an average per hour cost estimate. The amount of annual use of a machine is an estimate of the number of hours a commercial farmer would use that particular machine in one year.

Labor is not included in the "operating expense" column since it is shown separately. Labor is charged at an hourly wage rate, which includes a 30 percent factor for benefits. Charge rates are $9.50 per hour for unskilled labor and $12.00 per hour for skilled labor. Skilled labor is generally associated with the planting and harvesting equipment and sprayers. Labor per acre for an operation such as plowing and disking is calculated by using the work rate on the implement. Less labor per acre is used in a disking operation that covers more acres per hour than in a plowing operation. A small amount of extra labor is added over and above machine time to allow for downtime for tasks such as making adjustments and filling sprayers and planters. The labor adjustment ranges from 2 percent additional time for tillage to 33 percent for spraying.

These estimates will not represent any given individual's cost. They should not take the place of accurate record-keeping. They can still be used to help plan the cropping operation if more specific data are not available. Differences in buying power, repair programs, average annual use and overall replacement programs should be considered when making adjustments.

Machinery costs are substantial; control of them is important. Custom charges are often based upon them. No one should do custom work unless the charge will cover operating costs and use-related depreciation plus a return for one's risk and time. Ideally, all allocated per acre or hour overhead costs should also be covered by anyone offering to do custom work. The market for custom work usually does not cover all costs. The market is usually somewhere between the operating costs and the total of operating plus allocated per acre or hour overhead costs and depreciation.

Tables 1-6 provide the 1999 machinery function costs broken down into several categories. Some relevant supporting data also are included. A spreadsheet template is also available for downloading from the Department of Applied Economics, University of Minnesota, WWW site, for use in analyzing specific situations or just to better understand the methods used to calculate the numbers. The address is: http://apecon.agri.umn.edu/crop.html.

This specific OSU publication is available on the web in PDF (Adobe Acrobat) format under 1999 Farm Machinery Costs at:

http://www-agecon.ag.ohio-state.edu/Faculty/edit/faculty.cfm?FacultyID=15

Tables:

Table 1. Tractors & Combines (without heads)

Table 2. Tillage Equipment

Table 3. Planting Equipment

Table 4. Crop Maintenance Equipment

Table 5. Harvesting Equipment

Table 6. Miscellaneous Equipment

Table 1. Tractors & Combines (Without Heads) Economic Cost for 1999

Tractor or Combine HP	Net Cost of the New Power Unit	Annual Hours of Use	— Overhead[1] — Cost per Year	— Overhead[1] — Cost per Hour	Depreciation per Hour	— Operating[2] — Expense per Hour	— Operating[2] — Expense per Year	— Total Cost[3] — of Use per Year	— Total Cost[3] — of Use per Hour	Maintenance & Repair Cost/Hr.	Diesel Use/Hr. Gallons
40 Hp	20,000	400	971	2.43	3.01	2.09	836	3,011	7.53	0.7	1.8
60 Hp	23,200	400	1,125	2.81	3.49	2.90	1,162	3,685	9.21	0.8	2.6
75 Hp	27,200	400	1,329	3.32	4.01	3.62	1,447	4,380	10.95	1.0	3.3
105 MFWD	57,300	450	2,871	6.38	6.83	4.75	2,138	8,082	17.96	1.0	4.6
130 MFWD	74,900	450	3,740	8.31	8.93	5.95	2,679	10,437	23.19	1.3	5.7
160 MFWD	91,400	500	4,383	8.77	10.90	7.50	3,748	13,580	27.16	1.8	7.0
200 MFWD	106,600	500	5,104	10.21	12.71	9.22	4,608	16,068	32.14	2.1	8.8
225 MFWD	127,300	400	6,115	15.29	18.83	10.01	4,003	17,652	44.13	2.0	9.9
260 4Wd	98,600	400	4,755	11.89	14.59	10.79	4,315	14,905	37.26	1.6	11.4
310 4Wd	112,200	400	5,400	13.50	16.60	12.78	5,110	17,150	42.87	1.8	13.6
360 4Wd	123,400	400	5,930	14.83	18.26	14.73	5,890	19,124	47.81	2.0	15.8
425 4Wd	147,700	400	7,082	17.71	21.85	17.42	6,967	22,790	56.97	2.4	18.7
190 SmComb.	119,700	300	5,340	17.80	27.64	27.35	8,206	21,840	72.80	20.6	8.4
220 MdComb.	126,100	300	5,653	18.84	29.12	29.52	8,856	23,246	77.49	21.7	9.7
275 Lg Comb.	151,700	300	6,807	22.69	35.03	35.88	10,763	28,081	93.60	26.1	12.1

1) Overhead costs include interest, insurance and housing but not depreciation., which is shown separately because it varies to some extent with use.
2) Operating expenses include fuel, oil, repairs and maintenance but not labor, which is shown separately in the implement tables.
3) Total Cost includes overhead cost, operating cost and depreciation.

Table 2. Tillage Equipment Economic Cost Structure for 1999

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1/]	Operating Expense / Acre[3/]	Depreciation / Acre	Total Cost / Acre[2/] Equipment Tractor	Equipment +Machine	Labor +Charge	Total = Dollars
Chisel Plow 11 ft	75	5,200	5.87	469	29.83	0.89	1.30	1.87	1.57	1.65	5.08
Chisel Plow 15 ft	130	6,700	8.00	640	44.59	1.00	1.70	2.90	1.46	1.21	5.57
Chisel Plow 19 ft	160	11,700	10.13	811	56.60	1.09	1.88	2.68	1.95	0.96	5.59
Chisel Plow 23 ft	200	14,700	12.27	981	66.51	1.12	1.87	2.62	2.01	0.79	5.42
Chisel Plow 31 ft	225	18,600	16.53	1,323	84.98	0.95	1.92	2.67	1.88	0.59	5.14
Chisel Plow 37 ft	310	21,200	19.73	1,579	88.20	0.98	1.59	2.17	1.81	0.49	4.47
Chisel Plow 57 ft	425	34,300	30.40	2,432	123.37	0.92	1.50	1.87	1.87	0.32	4.06
Moldboard Plow 4-18, 6 ft	75	10,400	2.78	334	34.36	2.91	3.17	3.94	4.93	3.48	12.35
Moldboard Plow 5-18, 7.5 ft	105	12,800	3.48	417	44.57	2.95	3.67	5.16	4.87	2.79	12.82
Moldboard Plow 6-18, 9 ft	130	15,200	4.17	542	52.39	3.10	3.70	5.56	4.68	2.32	12.56
Moldboard Plow 8-18, 12 ft	160	20,400	5.56	723	62.97	3.03	3.52	4.88	4.69	1.74	11.32
Moldboard Plow 10-18, 15 ft	260	27,300	6.95	1,043	80.37	3.58	3.55	5.36	4.81	1.39	11.56
Reversible Plow 2-18, 3 ft	60	2,400	1.39	209	21.98	2.98	3.15	6.62	2.22	6.97	15.80
Reversible Plow 5-18, 7.5 ft	160	7,100	3.48	522	45.67	3.21	3.89	7.81	2.54	2.79	13.13
Reversible Plow 5-18 HD, 7.5 ft	160	9,900	3.48	522	49.16	3.62	4.19	7.81	3.54	2.79	14.14
Reversible Plow 8-18, 12 ft	225	14,000	5.56	835	71.23	3.10	4.32	7.93	3.13	1.74	12.80
Field Cultivator 12.5 ft	75	5,600	9.02	1,082	27.93	0.62	0.73	1.21	0.81	1.07	3.10
Field Cultivator 18 ft	105	9,000	12.98	1,558	39.14	0.61	0.85	1.38	0.89	0.75	3.01
Field Cultivator 28 ft	160	14,200	20.19	2,423	54.94	0.62	0.87	1.34	0.90	0.48	2.72
Field Cultivator 37 ft	225	20,200	26.68	3,202	79.34	0.64	1.06	1.65	0.96	0.36	2.97
Field Cultivator 47 ft	260	30,200	33.90	4,068	84.76	0.63	0.84	1.10	1.12	0.29	2.50
Field Cultivator 60 ft	310	37,400	43.27	5,193	99.13	0.60	0.78	0.99	1.08	0.22	2.29

(Continued on next page)

Table 2. Tillage Equipment Economic Cost Structure for 1999 (Continued)

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1/]	Operating Expense / Acre[3/]	Deprec-iation / Acre	Total Cost / Acre[2/] Equipment Tractor	+Machine	Labor +Charge	Total = Dollars
Chisel Plow, Front Disk 8.75 ft	105	9,000	4.96	397	42.24	1.31	2.76	3.62	2.94	1.95	8.52
Chisel Plow, Front Disk 16.25 ft	200	16,100	9.21	737	67.53	1.34	2.71	3.49	2.79	1.05	7.33
Chisel Plow, Front Disk 18.75 ft. fold	260	21,100	10.63	850	80.35	1.40	2.88	3.51	3.14	0.91	7.56
Chisel Plow, Front Disk 21.25 ft fold	310	24,300	12.04	963	90.89	1.45	2.91	3.56	3.18	0.80	7.55
Offset Disk 7 ft	60	5,200	3.25	325	25.94	1.26	2.05	2.84	2.17	2.99	7.99
Offset Disk 12 ft	105	9,400	5.56	556	40.39	1.24	2.25	3.23	2.29	1.74	7.26
Offset Disk 16 ft	130	11,800	7.42	742	49.05	1.16	2.17	3.13	2.18	1.31	6.61
Offset Disk Wing 21 ft	200	16,800	9.74	974	64.44	1.34	2.35	3.30	2.32	1.00	6.62
Tandem Disk 8.75 ft rigid	40	5,400	5.41	541	24.58	0.61	1.16	1.39	1.36	1.79	4.54
Tandem Disk 11ft rigid	60	6,000	6.40	640	27.89	0.77	1.12	1.44	1.40	1.51	4.36
Tandem Disk 15 ft rigid	105	11,000	8.73	873	43.86	0.97	1.55	2.06	1.86	1.11	5.03
Tdm Disk 21 ft fold	160	18,300	12.22	1,222	63.52	1.11	1.80	2.22	2.18	0.79	5.20
Tdm Disk HD 12 ft	130	9,400	6.98	698	46.73	1.30	2.10	3.32	1.98	1.39	6.69
Tdm Disk HD 18 ft fold	160	18,000	10.47	1,047	63.16	1.29	2.08	2.59	2.51	0.93	6.03
Tdm Disk HD 30 ft fold	360	30,500	17.45	1,745	101.44	1.43	2.11	2.74	2.52	0.56	5.81

(Continued on next page)

Table 2. Tillage Equipment Economic Cost Structure for 1999 (Continued)

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1/]	Operating Expense / Acre[3/]	Depreciation / Acre	Total Cost / Acre[2/] Equipment Tractor	+Machine	Labor +Charge	Total = Dollars
V-Ripper 25" OC 10 ft	160	10,700	6.18	618	51.95	1.77	2.72	4.39	2.44	1.57	8.40
V-Ripper 25" OC 14 ft	200	13,000	8.65	865	60.20	1.55	2.30	3.71	2.12	1.12	6.96
V-Ripper 25" OC 18 ft	260	16,700	11.13	1,113	70.57	1.45	2.14	3.35	2.12	0.87	6.34
V-Ripper 25" OC 25 ft	310	20,200	15.45	1,545	81.32	1.25	1.80	2.77	1.86	0.63	5.26
V-Ripper 30" OC 12.5 ft	160	8,900	7.73	773	49.59	1.34	2.05	3.51	1.65	1.25	6.42
V-Ripper 30" OC 17 ft	200	11,300	10.51	1,051	58.04	1.22	1.81	3.06	1.54	0.92	5.52
V-Ripper 30" OC 22.5 ft.	360	16,300	13.91	1,391	80.90	1.44	1.96	3.44	1.68	0.70	5.82
Comb Fld Cult Incorp 16 ft	160	16,100	11.54	1,154	60.03	1.10	1.79	2.35	2.01	0.84	5.20
Comb Fld Cult Incorp 23 ft	200	26,500	16.59	1,659	79.91	1.07	1.74	1.94	2.30	0.58	4.82
Comb Fld Cult Incorp 26 ft	260	28,600	18.03	1,803	88.10	1.11	1.77	2.07	2.28	0.54	4.89
Comb Fld Cult Incorp 33 ft	310	36,400	23.80	2,380	104.95	1.03	1.63	1.80	2.20	0.41	4.41
Comb Disk & V-Ripper 12.5	225	19,500	6.44	644	79.72	2.24	4.76	6.85	4.02	1.50	12.38
Comb Disk & V-Ripper 17.5	360	25,000	9.02	902	90.93	2.26	3.71	5.30	3.71	1.07	10.09
Disk Fld Cult Finish 13 ft	130	11,900	6.70	670	49.51	1.29	2.41	3.46	2.48	1.45	7.39
Dsk, Fld Cult Finish 22 ft	200	21,400	11.33	1,133	70.83	1.24	2.27	2.84	2.56	0.86	6.25
Dsk, Fld Cult Finish 30 ft	260	28,700	15.45	1,545	85.67	1.12	2.07	2.41	2.51	0.63	5.54
Dsk, Fld Cult Finish 38 ft	310	34,300	19.58	1,958	98.74	1.05	1.91	2.19	2.36	0.50	5.04
Springtooth Drag 30 ft	60	8,200	21.64	649	50.14	0.21	0.86	0.43	1.42	0.47	2.32
Springtooth Drag 48 ft	75	10,400	34.62	1,212	56.08	0.17	0.59	0.32	1.01	0.30	1.62
Springtooth Drag 58 ft	105	12,100	41.83	4,183	44.63	0.21	0.32	0.43	0.41	0.23	1.07
Roller Harrow 12 ft.	75	9,100	7.42	742	33.16	0.77	1.29	1.48	1.69	1.31	4.47
Roller Harrow 28 ft.	160	23,600	17.31	1,731	68.59	0.74	1.46	1.57	1.83	0.56	3.96

* See footnotes at end of table 5

Table 3. Planting Equipment Economic Cost Structure for 1999

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1/]	Operating Expense / Acre[3/]	Depreciation / Acre	Total Cost / Acre[2/] Equipment Tractor	+Machine	Labor +Charge	Total = Dollars
Row Crop Planter 4-36, 12 ft	40	13,500	5.60	392	45.50	1.08	2.25	1.34	4.30	2.49	8.13
Row Crop Planter 6-30, 15 ft	60	17,800	7.00	490	54.72	1.16	2.31	1.32	4.51	1.99	7.82
Row Crop Planter 8-30, 20 ft	75	25,500	9.33	653	69.91	1.19	2.37	1.17	4.83	1.49	7.49
Row Crop Planter 12-30, 30 ft	105	38,700	14.00	980	100.23	1.15	2.45	1.28	4.88	0.99	7.16
Min-Til Planter 4-36, 12 ft	60	20,000	5.09	356	58.43	1.72	3.48	1.81	6.93	2.73	11.48
Min-Til Planter 6-30, 15 ft	75	26,000	6.36	509	67.08	1.96	3.17	1.72	6.63	2.19	10.54
Min-Til Planter 8-30, 20 ft	105	30,900	8.48	594	86.27	1.63	3.39	2.12	6.41	1.64	10.17
Min-Til Planter 12-30, 30 ft	160	53,600	12.73	1,273	119.04	2.42	2.95	2.13	6.13	1.09	9.35
Min-Til Planter 16-30, 40 ft	200	75,800	16.97	2,206	149.64	3.13	2.46	1.89	6.10	0.82	8.82
Potato Planter Filler		12,700	5.75	322	27.06	0.58	1.96	0.00	4.71	0.00	4.71
Potato Row Marker 4 row	130	11,900	4.98	214	67.32	1.40	4.56	4.66	5.87	2.99	13.52
Potato Row Marker 6 row	160	18,600	7.47	321	87.76	1.22	4.34	3.64	6.12	1.99	11.75
Potato Row Marker 8 row	160	23,800	10.79	464	100.67	0.88	3.56	2.52	5.43	1.38	9.33
Potato Planter 4 row	130	35,800	3.83	214	122.65	3.70	10.64	6.06	19.01	6.96	32.02
Potato Planter 6 row	130	47,700	5.75	322	146.93	2.94	8.93	4.04	16.90	4.64	25.57
Potato Planter 8 row	160	65,600	8.30	465	187.37	2.72	8.34	3.27	16.08	3.21	22.57
Beet Planter 12 row	105	25,000	4.67	280	81.74	2.35	5.91	3.85	10.48	3.19	17.52
Grain Drill 25 ft	130	25,300	10.61	848	77.83	1.37	2.33	2.19	3.90	1.26	7.34
Grain Drill 30 ft	130	31,900	12.73	1,018	88.43	1.32	2.26	1.82	4.08	1.05	6.95
Grain Drill 35 ft	160	38,500	14.85	1,188	103.00	1.39	2.35	1.83	4.21	0.90	6.94

(Continued on next page)

Table 3. Planting Equipment Economic Cost Structure for 1999 (Continued)

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1/]	Operating Expense / Acre[3/]	Depreciation / Acre	Total Cost / Acre[2/] Equipment Tractor	+Machine	Labor +Charge	Total = Dollars
Presswheel Drill 12 ft	75	18,500	5.09	382	55.45	1.86	3.20	2.15	6.12	2.62	10.89
Presswheel Drill 16 ft	105	24,000	6.79	509	71.71	1.82	3.35	2.65	5.96	1.96	10.56
Presswheel Drill 20 ft	130	25,800	8.48	636	80.08	1.66	3.07	2.73	5.13	1.57	9.44
Presswheel Drill 30 ft	160	37,900	12.73	1,018	101.98	1.60	2.71	2.13	4.83	1.05	8.01
Presswheel Drill 40 ft	200	49,700	16.97	1,358	125.96	1.54	2.57	1.89	4.74	0.78	7.42
Air Seeder Drill 36 ft	260	58,400	15.27	1,222	144.93	2.01	3.33	2.44	6.18	0.87	9.49
No-Till Drill 15 ft	130	28,000	6.36	509	81.87	2.43	4.14	3.64	7.13	2.09	12.87
No-Till Drill 20 ft	160	40,800	8.48	679	106.44	2.52	4.28	3.20	7.77	1.57	12.54
No-Till Drill 30 ft	200	60,400	12.73	1,018	142.87	2.34	3.95	2.53	7.65	1.05	11.23

* See footnotes at end of table 5

Table 4. Crop Maintenance Equipment Economic Cost Structure for 1999

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1/]	Operating Expense / Acre[3/]	Depreciation / Acre	Total Cost / Acre[2/] Equipment Tractor	+Machine	Labor +Charge	Total = Dollars
Cultivator 4-36, 12 ft	75	3,600	6.18	618	25.71	0.72	0.97	1.77	0.79	1.60	4.16
Cultivator 6-30, 15 ft	60	4,500	7.73	773	25.17	0.51	0.78	1.19	0.79	1.28	3.26
Cultivator 8-30, 20 ft	130	6,100	10.30	1,030	41.33	0.72	1.20	2.25	0.80	0.96	4.01
Cultivator 12-30, 30 ft	160	12,000	15.45	1,545	52.83	0.67	1.14	1.76	1.02	0.64	3.42
Cultivator 16-30, 40 ft	200	14,700	20.61	2,061	61.40	0.61	1.01	1.56	0.94	0.48	2.98
Cultivator Hi Res 4-36, 12 ft	75	6,400	6.18	618	29.28	0.83	1.22	1.77	1.37	1.60	4.74
Cultivator Hi Res 6-30, 15 ft	105	8,700	7.73	773	39.28	0.88	1.51	2.32	1.48	1.28	5.08
Cultivator Hi Res 8-30, 20 ft	160	11,900	10.30	1,030	52.64	1.00	1.70	2.64	1.51	0.96	5.11
Cultivator Hi Res 12-30, 30 ft	225	20,200	15.45	1,545	80.30	0.95	1.94	2.86	1.70	0.64	5.20
Rotary Hoe 15 ft	75	4,000	18.55	1,855	26.56	0.25	0.35	0.59	0.31	0.53	1.43
Rotary Hoe 21 ft	105	6,200	25.96	2,596	36.71	0.25	0.41	0.69	0.34	0.38	1.41
Rotary Hoe 30 ft	160	9,400	37.09	3,709	50.33	0.27	0.45	0.73	0.36	0.27	1.36
Potato Cultivator 4 row, 13 ft	75	4,500	5.36	778	25.78	0.98	1.07	2.04	0.92	1.84	4.81
Potato Cultivator 6 row, 19 ft	105	6,800	8.04	1,126	35.50	0.89	1.18	2.23	0.95	1.23	4.41
Sugar Beef Cult. 12 row, 22 ft	105	10,200	5.60	336	47.68	1.08	2.90	3.21	3.54	1.76	8.51
S-P Boom Sprayer 47 ft		54,800	25.92	2,592	97.05	1.02	1.05	0.00	3.17	0.58	3.74
S-P Boom Sprayer 60 ft		68,200	33.09	3,309	117.03	0.99	1.03	0.00	3.08	0.45	3.54
Sprayer 30 ft	40	4,500	15.36	1,229	30.83	0.27	0.38	0.49	0.54	0.98	2.01
Boom Sprayer 50 ft	60	5,600	25.61	2,561	33.20	0.22	0.25	0.36	0.35	0.59	1.30
Sprayer Hi Pres 50 ft	60	23,800	23.64	2,364	60.25	0.61	0.65	0.39	1.52	0.63	2.55
Hooded Sprayer 8 row, 20 ft	40	6,300	10.24	819	33.90	0.48	0.68	0.73	1.11	1.46	3.31
Anhydrous Appl. 30 ft	160	18,300	12.73	509	97.26	1.40	2.65	2.13	4.51	0.99	7.64
Fert. Sprd. 4 T., 40 ft	60	9,400	23.76	713	59.07	0.33	0.80	0.39	1.57	0.53	2.49
Corn Stalk Chopper 12 ft	60	8,400	4.65	465	31.98	1.23	1.90	1.98	2.65	2.25	6.87
Potato Shredder 18 ft.	130	12,300	6.98	698	51.84	1.44	2.41	3.32	2.61	1.50	7.42
Stalk Shredder, 20 ft	130	14,400	7.76	776	55.01	1.39	2.34	2.99	2.75	1.35	7.09
Rock Picker 6 ft	75	12,300	1.42	85	52.95	7.70	12.07	7.72	21.58	8.04	37.34

* See footnotes at end of table 5

Table 5. Harvesting Equipment Economic Cost Structure for 1999

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1/]	Operating Expense / Acre[3/]	Deprec-iation / Acre	Total Cost / Acre[2/] Equipment Tractor	+Machine	Labor +Charge	Total = Dollars
Mower-Conditioner 9 ft	40	13,400	4.36	349	39.37	1.08	3.14	1.73	4.90	2.39	9.02
Rotary Hay Mower 6 ft	40	6,400	2.91	291	27.99	2.01	2.44	2.59	3.77	3.27	9.62
Rotary Mow/Cond. 9 ft	75	15,300	4.36	349	44.91	1.43	3.72	2.51	5.50	2.29	10.29
Hay Rake (Hyd) 9 ft	40	4,700	3.49	698	21.05	0.96	1.29	2.16	1.15	2.72	6.03
Hay Swather-Cond 12 ft	60	22,400	5.82	465	54.62	1.25	3.68	1.58	6.17	1.63	9.39
Swather-Cond 16 ft self prop		64,700	7.76	621	105.87	0.86	6.67	0.00	12.42	1.22	13.65
Grain Swather 18 ft pull type	75	10,500	8.73	698	36.79	0.49	1.42	1.25	1.87	1.09	4.22
Grain Swather 21 ft pull type	75	15,500	10.18	815	44.10	0.45	1.61	1.08	2.32	0.93	4.33
Grain Swather 21 ft self prop		47,400	10.18	815	81.41	0.54	3.72	0.00	7.06	0.93	8.00
Hay Baler PTO Twine, 12' swath	40	17,500	4.36	873	39.62	2.54	1.92	1.73	4.30	3.05	9.08
Round Baler 1000 lb, 9' swath	60	18,000	3.01	603	46.97	6.71	3.00	3.06	9.03	3.50	15.59
Round Baler 1500 lb, 12' swath	60	19,200	4.02	804	48.80	5.32	2.34	2.29	7.23	2.62	12.14
Rd Baler/Wrap 1000 lb, 9' swath	60	20,800	3.01	603	51.18	7.61	3.28	3.06	10.43	3.50	16.98
Lg Rectangular Baler 24 ft swath	130	59,100	16.29	815	167.47	0.63	5.01	1.42	8.21	0.65	10.28
Forage Harvester 2 row, 6 ft	105	24,400	1.65	165	62.64	5.61	13.20	10.85	18.96	8.05	37.86
Forage SP Harvstr 2 row, 6 ft		141,700	2.04	305	130.49	6.11	30.16	0.00	57.54	6.54	64.08
Forage SP Harvstr 3 row, 9 ft		159,300	3.05	458	145.77	4.79	22.60	0.00	43.36	4.36	47.72
Grain Combine Head 15 ft	Sm Comb	9,500	5.09	1,018	92.62	5.59	6.05	14.30	1.28	2.62	18.19
Grain Combine Head 20 ft	Md Comb	10,000	6.79	1,358	97.66	4.52	4.78	11.42	1.01	1.96	14.39
Grain Combine Head 30 ft	Lg Comb	18,000	10.18	2,036	119.17	3.73	4.03	9.19	1.20	1.31	11.70
Corn Combine Hd 4-36, 12 ft	Sm Comb	17,700	3.36	672	98.18	8.75	9.97	21.67	3.59	3.96	29.22
Corn Combine Hd 4-30, 10 ft	Sm Comb	19,400	2.80	560	99.29	10.58	12.17	26.00	4.70	4.76	35.46
Corn Combine Hd 6-30, 15 ft	Md Comb	23,900	4.20	840	107.07	7.69	8.82	18.45	3.87	3.17	25.49
Corn Combine Hd 8-30, 20 ft	Md Comb	31,000	5.09	1,018	111.91	6.51	7.74	15.22	4.15	2.62	21.98
Corn Combine Hd 12-30, 30 ft	Lg Comb	47,800	7.64	1,527	139.32	5.43	6.66	12.26	4.24	1.74	18.24

(Continued on next page)

Table 5. Harvesting Equipment Economic Cost Structure for 1999 (Continued)

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1]	Operating Expense / Acre[3]	Depreciation / Acre	Total Cost / Acre[2] Equipment Tractor	+Machine	Labor +Charge	Total = Dollars
Soybean Combine Hd Sm 13 ft	Sm Comb	12,800	3.86	772	94.85	7.47	8.26	18.86	2.26	3.45	24.57
Soybean Combine Hd Md 15 ft	Md Comb	13,600	4.45	891	100.08	6.98	7.55	17.39	2.08	2.99	22.47
Soybean Combine Hd Lg 18 ft	Lg Comb	14,900	5.35	1,069	117.12	7.04	7.48	17.51	1.91	2.49	21.91
Soybean Combine Hd Lg 25 ft	Lg Comb	17,600	7.42	1,485	118.93	5.11	5.50	12.61	1.62	1.79	16.02
Potato Windrower 2 row	75	31,000	1.49	149	62.89	7.13	15.95	7.33	27.90	6.87	42.10
Potato Windrower 4 row	105	67,900	2.99	299	118.74	6.75	16.82	6.01	30.30	3.43	39.74
Potato Harvester Seed 2R	130	65,500	1.38	295	115.46	18.94	20.12	16.82	38.81	28.10	83.73
Potato Harvester Seed 4R	130	103,600	2.76	590	146.43	13.72	14.03	8.41	30.63	14.05	53.09
Potato Harvester 2 row	130	53,600	1.84	294	113.20	11.23	16.06	12.61	27.88	21.08	61.57
Disk Bean Top Cutter 6 Row	105	12,800	6.40	512	51.66	1.18	2.59	2.81	3.18	2.08	8.07
Sugar Beet Lifter 4 row	105	46,600	3.47	277	124.51	10.08	12.18	5.18	26.91	3.84	35.93
Sugar Beet Lifter 6 row	130	60,800	5.20	426	156.50	8.77	10.38	4.46	23.07	2.56	30.10
Sugar Beet Topper 6 row	75	18,500	5.33	427	54.06	1.74	3.38	2.05	5.83	2.25	10.14
Sugar Beet Topper 12 row	160	35,700	10.67	853	99.08	1.73	3.56	2.55	5.62	1.13	9.29
Sugar Beet Wagon 8 Ton	75	9,900	3.47	277	36.61	1.64	3.35	3.16	4.66	2.74	10.56
Sugar Beet Wagon 20 Ton	200	39,300	5.20	520	93.69	3.46	7.09	6.18	10.01	1.83	18.02
Sugar Beet Wagon 24 Ton	225	41,600	5.20	520	108.68	3.71	8.54	8.49	10.59	1.83	20.90
1 Ton Hay Stacker	60	22,800	4.15	829	46.84	3.53	2.53	2.22	5.86	3.21	11.30
3 Ton Hay Stacker	75	33,700	4.84	1,064	59.86	4.62	2.78	2.26	7.36	2.75	12.38
6 Ton Hay Stacker	105	54,400	5.53	1,548	89.28	7.49	3.40	3.25	10.49	2.41	16.15

1) Total cost per hour is calculated as yearly depreciation, interest, insurance, housing and repairs, divided by hours used per year. Implement and power unit costs are summed. Fuel, lubricants, and labor are added to the total.
2) Total cost per acre is total cost per hour divided by acres per hour. Includes operating expenses, labor , and overhead costs. Including depreciation.
3) Total cost/acre columns include operating expenses as well as overhead costs. Operating expenses are also shown separately. Operating expenses include fuel, lubricants, repairs and maintenance, but not labor. Labor is listed separately.

Table 6. Miscellaneous Equipment Economic Cost Structure for 1999
Per Hour Calculations Only

Machine	Tractor Size (HP)	Net Cost Of the New Implement	Estimated Work-Performed Hours/ Year	Operating Expense / Hour	Deprec-iation / Hour	Total Cost / Hour	Diesel Fuel Gal/Hour
Rd Bale Wrapper Silage	60	17,900	150	16.59	10.83	45.42	2.6
Bale Wrapper Dry Hay, 9ft Swath	40	7,700	150	7.98	6.17	28.59	1.8
Large Forage Blower	60	5,400	50	3.78	10.13	31.46	2.6
Manure Spreader 150 Bu	75	6,500	100	8.42	7.63	32.43	3.3
Manure Spreader 300 Bu	105	8,600	100	11.11	11.63	43.24	4.6
Manure Spreader 400 Bu	130	12,700	100	15.34	16.02	55.87	5.7
Gravity Grain Box 185 Bu	60	2,500	130	3.51	4.68	21.90	2.6
Gravity Grain Box 240 Bu	75	4,000	130	4.58	5.90	25.27	3.3
Baled Hay Wagon	40	3,200	250	3.03	3.80	29.11	1.8
Forage Wagon 14 ft.	40	10,800	130	4.60	8.12	29.02	1.8
Forage Wagon 16 ft.	40	12,100	130	4.90	8.74	30.27	1.8
Soil scraper bucket, 12 cu yd	260	34,300	80	17.45	38.39	101.93	11.4